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ABSTRACT

Developed through a modified DACUM (Developing a Curriculum) process involving business, industry, labor, and community agency representatives in Ohio, this document is a comprehensive and verified employer competency profile for agricultural/industrial mechanical technician occupations. The list contains units (with and without subunits), competencies, and competency builders that identify the skills needed to enter these occupations. The occupational, academic, and employability skills for this occupation or occupational area are included. Within the outline are three levels of items: core, advancing, and futuring. Core items identify the knowledge, skills, and attitudes essential for entry-level employment. These items are required to be taught and will be the basis for questions on the state vocational competency tests. Advancing items identify the knowledge, skills, and attitudes needed to advance in the occupation; futuring items identify the knowledge, skills, and attitudes needed to enter and remain in a given occupation 3 to 4 years from now. Titles of the 17 units are as follows: general safety precautions; general equipment maintenance; general repair procedures; general shop practices; equipment operation; cylinder head; engine block; lubrication system; cooling systems; fuel and air systems; electrical systems; drivetrain; brake systems; suspension and steering; heating and air conditioning; hydraulics; and employability skills. (YLB)

ED345069

OCAP

OHIO'S COMPETENCY ANALYSIS PROFILE

AGRICULTURAL/INDUSTRIAL MECHANICAL TECHNICIAN

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What is OCAP?

"A comprehensive and verified employer competency list will be developed and kept current for each program." This is the second objective of Imperative 3 of the *Action Plan for Accelerating the Modernization of Vocational Education: Ohio's Future at Work*. Ohio's Competency Analysis Profile (OCAP) lists are the Division of Vocational and Career Education's response to that objective. OCAP lists evolve from a modified DACUM process involving business, industry, labor, and community agency representatives from throughout Ohio. The OCAP process is directed by the Vocational Instructional Materials Laboratory at The Ohio State University's Center on Education and Training for Employment.

How is OCAP used?

Each OCAP contains units (with and without subunits), competencies, and competency builders that identify the occupational, academic,* and employability skills needed to enter a given occupation or occupational area. Within that outline there are three levels of items: core, advancing, and futuring. Core items identify the knowledge, skills, and attitudes essential for entry-level employment. These items will be the basis for questions on the state vocational competency tests (scheduled to begin in school year 1993-94). Advancing items (marked with one asterisk) identify the knowledge, skills, and attitudes needed to advance in a given occupation. Futuring items (marked with two asterisks) identify the knowledge, skills, and attitudes needed to enter and remain in a given occupation three to four years from now.

School districts may add as many units, subunits, competencies, and/or competency builders as desired to reflect local employment needs, trends, and specialties. Local advisory committees should be actively involved in the identification and verification of additional items. Using OCAP lists, instructors will be able to formulate their vocational courses of study and monitor competency gains via the new criterion-referenced competency testing program that will be directly tied to the competencies identified on the OCAP lists.

***Academic competencies have not been identified for all OCAPs. At a later date math, communication, and science competencies will be released.**

The **Employability Skills** portion of this list was verified by the following employer panel:

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Ohio Competency Analysis Profile Agricultural/Industrial Mechanical Technician

Unit 1: General Safety Precautions

Competency 1.0.1: Maintain safe work environment

Competency Builders:

1.0.1.1 Read and follow safety information
1.0.1.2 Organize and maintain clean and safe work area
1.0.1.3 Comply with shop and equipment safety rules
1.0.1.4 Ventilate work area
1.0.1.5 Identify and report safety hazards
1.0.1.6 Correct safety hazards
1.0.1.7 Maintain safety devices
1.0.1.8 Complete accident report

Competency 1.0.2: Recognize environmental issues

Competency Builders:

1.0.2.1 Identify hazardous materials
1.0.2.2 Interpret material safety data sheets (MSDSs)
1.0.2.3 Monitor regulation updates
1.0.2.4 Comply with controlled product regulations
1.0.2.5 Observe safety precautions when applying chemicals
1.0.2.6 Observe safety precautions when storing chemicals
1.0.2.7 Follow personal cleanup procedures after handling chemicals
1.0.2.8 Dispose of chemicals and chemical containers
1.0.2.9 Identify Environmental Protection Agency (EPA) regulations

Competency 1.0.3: Demonstrate safe work habits

Competency Builders:

1.0.3.1 Read and follow label information
1.0.3.2 Wear protective clothing and equipment
1.0.3.3 Check working condition of personal protective equipment
1.0.3.4 Use safe lifting and carrying methods
1.0.3.5 Interpret information on signs
1.0.3.6 Observe and comply with safety zones
1.0.3.7 Maintain and use slow-moving-vehicle signs
1.0.3.8 Maintain proper lighting
1.0.3.9 Keep riders off mobile equipment

* Advancing
** Futuring

Competency 1.0.4: Operate and maintain equipment

Competency Builders:

1.0.4.1 Follow safety rules
1.0.4.2 Observe and comply with safety zones
1.0.4.3 Operate equipment defensively
1.0.4.4 Interpret safety symbols
1.0.4.5 Maintain safety shields and devices according to original equipment manufacturer (OEM)
1.0.4.6 Shut down and lock out/tag out power equipment
1.0.4.7 Identify potential equipment safety hazards
1.0.4.8 Follow manufacturer's service recommendations

Unit 2: General Equipment Maintenance

Competency 2.0.1: Use service and operator's manuals

Competency Builders:

2.0.1.1 Locate manuals for equipment
2.0.1.2 Locate specifications for equipment
2.0.1.3 Interpret sketches and diagrams
2.0.1.4 Adhere to repair procedures

Competency 2.0.2: Assemble equipment

Competency Builders:

2.0.2.1 Follow general safety precautions
2.0.2.2 Identify equipment components
2.0.2.3 Check packing list against parts and hardware in bundles
2.0.2.4 Follow written assembly instructions
2.0.2.5 Lay out by checklist
2.0.2.6 Interpret assembly diagrams
2.0.2.7 Identify and use hardware items
2.0.2.8 Arrange parts for ease of assembly
2.0.2.9 Inspect assembled equipment for defects
2.0.2.10 Tighten bolts in sequence
2.0.2.11 Make necessary adjustments

Competency 2.0.3: Clean equipment

Competency Builders:

2.0.3.1 Follow general safety precautions
2.0.3.2 Select cleaning solvents and detergents
2.0.3.3 Follow procedures for waste disposal
2.0.3.4 Remove debris from equipment
2.0.3.5 Remove engine deposits from internal components
2.0.3.6 Remove oil, grease, and dirt
2.0.3.7 Protect equipment from weather

Competency 2.0.4: Lubricate equipment

Competency Builders:

2.0.4.1 Identify service points
2.0.4.2 Select lubricant
2.0.4.3 Maintain grease fittings
2.0.4.4 Apply lubricant

Unit 3: General Repair Procedures

Competency 3.0.1: Use measuring devices

Competency Builders:

3.0.1.1 Follow general safety precautions
3.0.1.2 Identify types of measuring devices
3.0.1.3 Determine factors affecting torque
3.0.1.4 Use a torque wrench
3.0.1.5 Use and read a micrometer
3.0.1.6 Use and read dial indicators
3.0.1.7 Use clearance measurement tools

Competency 3.0.2: Use and maintain hand and power tools

Competency Builders:

3.0.2.1 Follow general safety precautions
3.0.2.2 Read and follow operation instructions
3.0.2.3 Identify tools
3.0.2.4 Select and use proper tools
3.0.2.5 Set up and adjust tools
3.0.2.6 Clean and lubricate tools
3.0.2.7 Recondition tools
3.0.2.8 Sharpen tools
3.0.2.9 Store tools
3.0.2.10 Troubleshoot problems

Competency 3.0.3: Diagnose malfunctions

Competency Builders:

3.0.3.1 Identify effect of defective parts
3.0.3.2 Follow troubleshooting procedures in service manual
3.0.3.3 Determine potential causes of equipment failure from customer's description
3.0.3.4 Inspect visually for defects
3.0.3.5 Operate equipment to identify defects
3.0.3.6 Refer to manufacturer's specifications
3.0.3.7 Operate test equipment
3.0.3.8 Review past maintenance documents
3.0.3.9 Check for leaking fluids
3.0.3.10 Check for air leaks
3.0.3.11 Identify causes of noise

* Advancing
** Futuring

Competency 3.0.4: Determine equipment repair procedures

Competency Builders:

3.0.4.1 Follow general safety precautions
3.0.4.2 Identify component parts
3.0.4.3 Identify component types
3.0.4.4 Identify component function
3.0.4.5 Identify fluid additives
3.0.4.6 Select component type
3.0.4.7 Use special tools
3.0.4.8 Use test equipment
3.0.4.9 Use service and technical manuals

Competency 3.0.5: Use general mechanical techniques

Competency Builders:

3.0.5.1 Follow general safety precautions
3.0.5.2 Extract broken stud or bolt
3.0.5.3 Replace studs
3.0.5.4 Thread holes and bolts
3.0.5.5 Tighten bolts
3.0.5.6 Free frozen parts
3.0.5.7 Maintain clean work area
3.0.5.8 Install gaskets and sealants
3.0.5.9 Inspect mating surfaces
3.0.5.10 Lubricate parts for assembly

Competency 3.0.6: Service bearings, seats, and seals

Competency Builders:

3.0.6.1 Follow general safety precautions
3.0.6.2 Remove seals
3.0.6.3 Remove bearings
3.0.6.4 Inspect bearings, seats, and seals
3.0.6.5 Clean bearings
3.0.6.6 Lubricate bearings
3.0.6.7 Install bearings and seals

Competency 3.0.7: Service belt and drive chain assemblies

Competency Builders:

3.0.7.1 Follow general safety precautions
3.0.7.2 Replace and adjust belts
3.0.7.3 Replace pulleys
3.0.7.4 Replace and adjust gear assembly
3.0.7.5 Replace and adjust chains
3.0.7.6 Replace rollers
3.0.7.7 Troubleshoot problems

* Advancing
** Futuring

Unit 4: General Shop Practices

Competency 4.0.1: Weld with gas

Competency Builders:

4.0.1.1 Follow general safety precautions
4.0.1.2 Select welding equipment
4.0.1.3 Set up welding equipment
4.0.1.4 Select rod
4.0.1.5 Select and apply flux
4.0.1.6 Prepare metal
4.0.1.7 Weld steel in horizontal position
4.0.1.8 Weld steel in nonhorizontal positions
4.0.1.9 Braze metal
4.0.1.10 Hard-surface metal
4.0.1.11 Cut metal
4.0.1.12 Clean and store gas welding equipment
4.0.1.13 Secure and store gas cylinders

Competency 4.0.2: Weld with electric arc

Competency Builders:

4.0.2.1 Follow general safety precautions
4.0.2.2 Select welding equipment and accessories
4.0.2.3 Select electrode
4.0.2.4 Select settings
4.0.2.5 Prepare metal
4.0.2.6 Weld steel in horizontal position
4.0.2.7 Weld pipe
4.0.2.8 Cut metal
4.0.2.9 Hard-surface metal
4.0.2.10 Weld steel in nonhorizontal positions
4.0.2.11 Weld cast iron
4.0.2.12 Clean and store welding equipment

Competency 4.0.3: Identify properties of metals

Competency Builders:

4.0.3.1 Follow general safety precautions
4.0.3.2 Identify types of metal
4.0.3.3 Identify nominal sizes of metal
4.0.3.4 Determine metal properties
4.0.3.5 Test metal for type
4.0.3.6 Test metal for hardness

* Advancing
** Futuring

Competency 4.0.4: Fabricate with metal

Competency Builders:

4.0.4.1 Follow general safety precautions
4.0.4.2 Design metal project within manufacturer's specifications
4.0.4.3 Prepare bill of materials
4.0.4.4 Punch and drill metal
4.0.4.5 Cut metal
4.0.4.6 Grind metal
4.0.4.7 Select and attach hardware
4.0.4.8 Select and apply fasteners
4.0.4.9 Bend metal
4.0.4.10 Join metal
4.0.4.11 Store metal

Competency 4.0.5: Solder

Competency Builders:

4.0.5.1 Follow general safety precautions
4.0.5.2 Select soldering method
4.0.5.3 Select tools
4.0.5.4 Select flux
4.0.5.5 Select solder
4.0.5.6 Prepare surfaces
4.0.5.7 Apply solder
4.0.5.8 Clean equipment

Competency 4.0.6: Apply protective coatings*

Competency Builders:

4.0.6.1 Follow general safety precautions*
4.0.6.2 Determine type of coating needed*
4.0.6.3 Select and use application tools*
4.0.6.4 Adjust application equipment*
4.0.6.5 Prepare surface*
4.0.6.6 Apply masking tape*
4.0.6.7 Thin paint*
4.0.6.8 Apply primer coat*
4.0.6.9 Apply finish coat*
4.0.6.10 Apply wood preservative*
4.0.6.11 Use paint and varnish remover*
4.0.6.12 Clean application equipment*

* Advancing
** Futuring

Unit 5: Equipment Operation

Competency 5.0.1: Perform prestart functions

Competency Builders:

5.0.1.1 Follow general safety precautions
5.0.1.2 Select fuel type
5.0.1.3 Refuel power units
5.0.1.4 Check prestart mechanism
5.0.1.5 Disengage power to accessories
5.0.1.6 Check fluid levels

Competency 5.0.2: Hitch equipment to power units

Competency Builders:

5.0.2.1 Follow general safety precautions
5.0.2.2 Connect front-end-operated equipment
5.0.2.3 Connect 3-point hitch equipment
5.0.2.4 Attach and detach power takeoff (PTO) equipment
5.0.2.5 Hitch towed equipment
5.0.2.6 Connect hydraulic lines
5.0.2.7 Connect electrical hookups
5.0.2.8 Connect safety chains
5.0.2.9 Adjust ballast

Competency 5.0.3: Operate equipment and vehicles

Competency Builders:

5.0.3.1 Follow general safety precautions
5.0.3.2 Set throttle
5.0.3.3 Interpret equipment gauges
5.0.3.4 Start power unit
5.0.3.5 Warm up engine
5.0.3.6 Use hand operating signals
5.0.3.7 Operate transmissions
5.0.3.8 Operate PTO unit
5.0.3.9 Use brake system
5.0.3.10 Shut down power unit
5.0.3.11 Operate equipment systems

Competency 5.0.4: Operate small engines

Competency Builders:

5.0.4.1 Follow general safety precautions
5.0.4.2 Identify engine variations
5.0.4.3 Mix fuel for two-cycle engine
5.0.4.4 Check fuel and fuel engine
5.0.4.5 Check oil level
5.0.4.6 Start engine
5.0.4.7 Regulate throttle
5.0.4.8 Engage power unit
5.0.4.9 Shut down engine

* Advancing
** Futuring

Unit 6: Cylinder Head

Competency 6.0.1: Service cylinder head

Competency Builders:

6.0.1.1 Follow general safety precautions
6.0.1.2 Remove and inspect valve cover
6.0.1.3 Inspect, measure, test, and install cylinder head
6.0.1.4 Replace valve stem seals
6.0.1.5 Inspect, measure, and replace valve guides
6.0.1.6 Recondition valve guides
6.0.1.7 Inspect, measure, and resurface valve seats
6.0.1.8 Replace valve seats
6.0.1.9 Inspect, replace, and adjust valve bridges
6.0.1.10 Inspect and replace precombustion chamber

Competency 6.0.2: Service valve assembly

Competency Builders:

6.0.2.1 Inspect, measure, and replace valves
6.0.2.2 Adjust valve clearance
6.0.2.3 Recondition valves
6.0.2.4 Lap valves
6.0.2.5 Measure valve head height
6.0.2.6 Measure valve face-to-seat contact
6.0.2.7 Measure valve concentricity
6.0.2.8 Vacuum-test valve sealing
6.0.2.9 Inspect, test, and replace lifters
6.0.2.10 Inspect and replace rocker arm components
6.0.2.11 Adjust and replace cam followers
6.0.2.12 Inspect, measure, test, and replace valve spring assembly
6.0.2.13 Time valve assembly

Competency 6.0.3: Service camshaft assembly

Competency Builders:

6.0.3.1 Inspect, measure, and replace camshaft
6.0.3.2 Time camshaft
6.0.3.3 Inspect, measure, and replace bearings
6.0.3.4 Measure and adjust camshaft end play
6.0.3.5 Inspect and replace camshaft gear

* Advancing
** Futuring

Unit 7: Engine Block

Competency 7.0.1: Service engine block

Competency Builders:

7.0.1.1 Follow general safety precautions
7.0.1.2 Remove and install engine
7.0.1.3 Install front and rear oil seals
7.0.1.4 Inspect and replace pans and covers
7.0.1.5 Inspect, measure, and test engine block
7.0.1.6 Inspect and measure cylinder walls or liners
7.0.1.7 Rebore cylinder*
7.0.1.8 Deglaze cylinder walls
7.0.1.9 Remove cylinder ridge
7.0.1.10 Inspect and measure sleeve bore
7.0.1.11 Replace cylinder liners and seals
7.0.1.12 Inspect and replace time drive gear train
7.0.1.13 Inspect and replace timing chain
7.0.1.14 Inspect and replace ring gear
7.0.1.15 Inspect piston cooling jets
7.0.1.16 Inspect and align flywheel housing

Competency 7.0.2: Service piston assembly

Competency Builders:

7.0.2.1 Inspect, measure, and replace piston and piston pins
7.0.2.2 Inspect, measure, and replace piston rings
7.0.2.3 Inspect, measure, and replace piston rod
7.0.2.4 Inspect, measure, and replace rod bearings
7.0.2.5 Measure piston-to-cylinder-wall clearance
7.0.2.6 Measure ring-to-groove clearance
7.0.2.7 Measure ring end gap

Competency 7.0.3: Service crankshaft assembly

Competency Builders:

7.0.3.1 Inspect, measure, and replace main bearings
7.0.3.2 Inspect, measure, and replace crankshaft
7.0.3.3 Inspect and replace crankshaft gear
7.0.3.4 Inspect, measure, and replace crankshaft vibration damper
7.0.3.5 Measure oil slinger runout
7.0.3.6 Install oil slinger
7.0.3.7 Measure and adjust crankshaft end play
7.0.3.8 Remove or add shims
7.0.3.9 Inspect, measure, and replace flywheel
7.0.3.10 Inspect, measure, and replace flexplate

* Advancing
** Futuring

Unit 8: Lubrication System

Competency 8.0.1: Maintain lubrication system

Competency Builders:

8.0.1.1 Follow general safety precautions
8.0.1.2 Check oil level
8.0.1.3 Select oil
8.0.1.4 Change oil
8.0.1.5 Change oil filters
8.0.1.6 Dispose of oil
8.0.1.7 Observe oil for contamination
8.0.1.8 Estimate engine oil consumption
8.0.1.9 Pull sample for oil analysis

Competency 8.0.2: Repair lubrication system

Competency Builders:

8.0.2.1 Perform oil pressure test
8.0.2.2 Adjust oil pressure
8.0.2.3 Inspect, measure, test, and replace oil pump
8.0.2.4 Repair oil pump
8.0.2.5 Inspect, test, and replace engine oil pressure sending unit
8.0.2.6 Inspect, test, and replace engine oil pressure gauge
8.0.2.7 Inspect and replace components regulating oil pressure
8.0.2.8 Inspect, measure, and repair pump drives
8.0.2.9 Replace idler gear
8.0.2.10 Inspect, test, and replace oil cooler
8.0.2.11 Inspect, test, and replace sensors
8.0.2.12 Inspect, test, and replace switches
8.0.2.13 Test and replace differential valve*
8.0.2.14 Inspect and replace oil lines

Unit 9: Cooling Systems

Competency 9.0.1: Maintain cooling system

Competency Builders:

9.0.1.1 Follow general safety precautions
9.0.1.2 Check coolant level
9.0.1.3 Check coolant condition
9.0.1.4 Inspect for leaks
9.0.1.5 Flush cooling system
9.0.1.6 Test coolant mixture
9.0.1.7 Mix and add coolant
9.0.1.8 Bleed air from system
9.0.1.9 Inspect and replace hoses
9.0.1.10 Drain and clean water filter assembly
9.0.1.11 Replace water filter element

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9.0.1.12 Maintain coolant conditioner
9.0.1.13 Dispose of coolant
9.0.1.14 Inspect and replace belts

Competency 9.0.2: Repair cooling system

Competency Builders:

9.0.2.1 Inspect, test, replace, and adjust thermostat
9.0.2.2 Inspect, test, and replace radiator
9.0.2.3 Repair radiator*
9.0.2.4 Inspect and test pressure cap
9.0.2.5 Inspect, test, and replace fan assembly
9.0.2.6 Inspect and repair fan clutch assembly
9.0.2.7 Clean, inspect, test, and replace temperature sensors
9.0.2.8 Clean, inspect, test, and replace temperature switches
9.0.2.9 Inspect and replace coolant temperature gauge
9.0.2.10 Inspect and replace sending unit
9.0.2.11 Inspect and replace water pump
9.0.2.12 Recondition water pump assembly
9.0.2.13 Inspect and repair radiator shutter assembly

Unit 10: Fuel and Air Systems

Competency 10.0.1: Service gasoline fuel systems

Competency Builders:

10.0.1.1 Follow general safety precautions
10.0.1.2 Check fuel for contaminants
10.0.1.3 Check fuel level
10.0.1.4 Inspect and replace fuel filters
10.0.1.5 Inspect and replace fuel tank components
10.0.1.6 Inspect and replace fuel lines
10.0.1.7 Inspect and replace fuel pump
10.0.1.8 Inspect and test fuel pump controls
10.0.1.9 Inspect cold-enrichment systems
10.0.1.10 Remove and replace carburetor
10.0.1.11 Rebuild carburetor
10.0.1.12 Adjust carburetor idle speed
10.0.1.13 Adjust idle mixture
10.0.1.14 Adjust full-load mixture
10.0.1.15 Adjust linkages
10.0.1.16 Remove and replace fuel-injection throttle body
10.0.1.17 Service fuel-injection system
10.0.1.18 Perform fuel injector tests*
10.0.1.19 Replace fuel system warning devices
10.0.1.20 Perform manifold vacuum test
10.0.1.21 Repair fuel tank components*

Competency 10.0.2: Service diesel fuel system

Competency Builders:

10.0.2.1 Follow general safety precautions
10.0.2.2 Check fuel for contaminants
10.0.2.3 Check fuel level
10.0.2.4 Measure fuel consumption
10.0.2.5 Prime and bleed fuel system
10.0.2.6 Inspect and replace fuel filters
10.0.2.7 Inspect and replace fuel tank components
10.0.2.8 Inspect and replace fuel transfer pump
10.0.2.9 Inspect and replace fuel system heaters
10.0.2.10 Repair fuel system heaters
10.0.2.11 Inspect and replace primer pump
10.0.2.12 Repair primer pump
10.0.2.13 Adjust throttle control linkage
10.0.2.14 Adjust electronic throttle controls
10.0.2.15 Inspect and replace electronic fuel controls
10.0.2.16 Inspect and replace injection pump drives
10.0.2.17 Time injection pump drives
10.0.2.18 Inspect, test, replace, and adjust unit injectors
10.0.2.19 Inspect, test, and replace unit injector electronic controls
10.0.2.20 Inspect smoke limiters
10.0.2.21 Inspect and replace components of high-pressure injection line
10.0.2.22 Inspect and replace components of low-pressure fuel line
10.0.2.23 Repair components of low-pressure fuel line
10.0.2.24 Inspect, test, and adjust safety shutdown devices
10.0.2.25 Inspect and replace injector sleeves
10.0.2.26 Inspect and replace injector seals
10.0.2.27 Inspect, test, and adjust injection nozzles
10.0.2.28 Measure injector nozzle protrusion
10.0.2.29 Repair fuel tank components*

Competency 10.0.3: Service governor system

Competency Builders:

10.0.3.1 Follow general safety precautions
10.0.3.2 Measure idler gear end play
10.0.3.3 Inspect, replace, and recondition governor assembly
10.0.3.4 Adjust governor
10.0.3.5 Inspect, replace, and adjust governor linkage

Competency 10.0.4: Service air-induction system

Competency Builders:

10.0.4.1 Follow general safety precautions
10.0.4.2 Inspect and replace piping
10.0.4.3 Inspect and replace air cleaner components
10.0.4.4 Inspect and install intake manifold
10.0.4.5 Insect and replace turbocharger
10.0.4.6 Inspect and replace engine blower
10.0.4.7 Inspect and replace intake manifold
10.0.4.8 Repair intake manifold
10.0.4.9 Inspect, test, and replace aftercooler assembly
10.0.4.10 Repair aftercooler assembly
10.0.4.11 Inspect and repair preheater system
10.0.4.12 Repair starting fluid system
10.0.4.13 Replace components of starting fluid system
10.0.4.14 Replace components of emergency air-induction shutoff system
10.0.4.15 Repair emergency air-induction shutoff system
10.0.4.16 Recondition turbocharger

Competency 10.0.5: Service emission control system

Competency Builders:

10.0.5.1 Follow general safety precautions
10.0.5.2 Inspect and replace components of crankcase ventilation system
10.0.5.3 Inspect and replace components of exhaust gas recirculation system
10.0.5.4 Inspect and replace components of air-injection emission system
10.0.5.5 Inspect and replace components of fuel vapor control system
10.0.5.6 Inspect and replace components of air-temperature control system

Competency 10.0.6: Service exhaust system

Competency Builders:

10.0.6.1 Follow general safety precautions
10.0.6.2 Inspect and replace exhaust manifold
10.0.6.3 Repair exhaust manifold
10.0.6.4 Inspect and replace exhaust piping
10.0.6.5 Inspect and replace exhaust mufflers
10.0.6.6 Replace rain cap
10.0.6.7 Inspect and replace resonators
10.0.6.8 Inspect and replace catalytic converter
10.0.6.9 Inspect and replace mounting hardware
10.0.6.10 Inspect and replace heat shields

Competency 10.0.7: Repair engine brake systems**

Competency Builders:

10.0.7.1 Follow general safety precautions**
10.0.7.2 Inspect and repair engine brake assembly**
10.0.7.3 Adjust engine brake**
10.0.7.4 Inspect and repair electronic control systems**

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Unit 11: Electrical Systems

Competency 11.0.1: Service ignition system

Competency Builders:

11.0.1.1 Follow general safety precautions
11.0.1.2 Read electrical schematic drawings
11.0.1.3 Diagnose ignition-related starting problems
11.0.1.4 Diagnose ignition-related running problems
11.0.1.5 Check for spark
11.0.1.6 Check ignition resistor
11.0.1.7 Inspect, test, and repair primary circuit wiring
11.0.1.8 Inspect, test, and replace distributor
11.0.1.9 Repair distributor
11.0.1.10 Inspect, test, and repair secondary circuit wiring
11.0.1.11 Inspect and replace ignition coil
11.0.1.12 Test coil polarity
11.0.1.13 Check and adjust ignition timing
11.0.1.14 Inspect, test, and replace electronic ignition components
11.0.1.15 Inspect, test, and replace components of spark control system
11.0.1.16 Repair components of spark control system
11.0.1.17 Inspect, test, and replace spark plugs
11.0.1.18 Inspect and replace spark plug wires
11.0.1.19 Adjust spark plug gap
11.0.1.20 Inspect and replace distributor cap and rotor
11.0.1.21 Inspect and replace breaker points
11.0.1.22 Adjust breaker point gap
11.0.1.23 Test and replace condenser
11.0.1.24 Inspect and replace magneto
11.0.1.25 Inspect and replace ignition switch

Competency 11.0.2: Service batteries

Competency Builders:

11.0.2.1 Follow general safety precautions
11.0.2.2 Measure specific gravity
11.0.2.3 Identify battery voltage
11.0.2.4 Identify battery polarity
11.0.2.5 Measure cell voltage
11.0.2.6 Perform battery capacity test
11.0.2.7 Determine battery state-of-charge
11.0.2.8 Inspect and replace battery
11.0.2.9 Add water
11.0.2.10 Inspect and repair battery box components
11.0.2.11 Charge battery
11.0.2.12 Inspect, clean, and repair battery cables
11.0.2.13 Replace battery cables
11.0.2.14 Jump-start vehicle
11.0.2.15 Dispose of battery

Competency 11.0.3: Service starting system

Competency Builders:

11.0.3.1 Follow general safety precautions
11.0.3.2 Perform starter current draw test
11.0.3.3 Perform starter circuit voltage drop test
11.0.3.4 Inspect, test, and replace wires in circuit
11.0.3.5 Inspect and replace starter
11.0.3.6 Recondition starter
11.0.3.7 Test starter armature and field coils
11.0.3.8 Conduct no-load test on starter
11.0.3.9 Inspect, test, and replace relays
11.0.3.10 Inspect, test, and replace solenoids
11.0.3.11 Inspect and replace ignition switch

Competency 11.0.4: Service charging system

Competency Builders:

11.0.4.1 Follow general safety precautions
11.0.4.2 Diagnose charging problems
11.0.4.3 Inspect, adjust, and replace fans
11.0.4.4 Perform charging system output test
11.0.4.5 Perform charging circuit voltage drop test
11.0.4.6 Remove and replace alternator
11.0.4.7 Inspect, test, and replace wires in circuit
11.0.4.8 Inspect, test, and replace generator
11.0.4.9 Recondition generator
11.0.4.10 Test generator armature
11.0.4.11 Test generator field coils
11.0.4.12 Polarize generator
11.0.4.13 Adjust regulator air gap
11.0.4.14 Replace regulator
11.0.4.15 Conduct regulator current test
11.0.4.16 Conduct regulator voltage test

Competency 11.0.5: Service lights

Competency Builders:

11.0.5.1 Follow general safety precautions
11.0.5.2 Inspect and replace fuses
11.0.5.3 Diagnose lighting problems
11.0.5.4 Test, aim, and replace headlamps
11.0.5.5 Test and replace light bulbs
11.0.5.6 Inspect, test, and replace wires in circuit
11.0.5.7 Test and repair socket assembly
11.0.5.8 Inspect, test, and replace switches
11.0.5.9 Replace lenses

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Competency 11.0.6: Service light controls

Competency Builders:

11.0.6.1 Follow general safety precautions
11.0.6.2 Inspect and replace fuses and circuit breakers
11.0.6.3 Replace fuse blocks
11.0.6.4 Inspect, test, and replace turn signal assembly
11.0.6.5 Inspect, test, and replace stoplight
11.0.6.6 Test and replace switches
11.0.6.7 Inspect, test, and replace hazard flasher
11.0.6.8 Inspect, test, and replace backup light system

Competency 11.0.7: Service gauges

Competency Builders:

11.0.7.1 Follow general safety precautions
11.0.7.2 Diagnose problems
11.0.7.3 Test and replace gauge circuit voltage regulators
11.0.7.4 Inspect, test, and repair components of warning light system
11.0.7.5 Inspect, test, and repair components of warning buzzer system
11.0.7.6 Inspect, test, and replace speedometer system
11.0.7.7 Inspect, test, and replace odometer system
11.0.7.8 Inspect, test, and replace tachometer system
11.0.7.9 Calibrate speedometer, odometer, and tachometer*

Competency 11.0.8: Service electrical accessories

Competency Builders:

11.0.8.1 Follow general safety precautions
11.0.8.2 Diagnose problems
11.0.8.3 Inspect and replace fuses
11.0.8.4 Inspect, test, and repair horn circuit components
11.0.8.5 Inspect, test, and repair wiper speed control
11.0.8.6 Replace wiper speed control
11.0.8.7 Inspect, test, and repair wiper motor
11.0.8.8 Replace wiper motor
11.0.8.9 Inspect and repair wiper linkages
11.0.8.10 Inspect, test, and repair windshield washer assembly
11.0.8.11 Replace components of windshield washer assembly
11.0.8.12 Replace warning devices

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Unit 12: Drivetrain

Competency 12.0.1: Repair clutch

Competency Builders:

12.0.1.1 Follow general safety precautions
12.0.1.2 Diagnose clutch problems
12.0.1.3 Inspect and adjust clutch linkage
12.0.1.4 Adjust clutch pedal free travel
12.0.1.5 Inspect and install clutch housing
12.0.1.6 Inspect clutch shaft and forks
12.0.1.7 Inspect and replace pilot bearing
12.0.1.8 Inspect and replace release bearing assembly
12.0.1.9 Inspect and replace clutch plate
12 0.1.10 Inspect and replace clutch discs
12.0.1.11 Inspect and replace clutch springs
12.0.1.12 Inspect input shaft splines
12.0.1.13 Replace bushings in clutch assembly
12.0.1.14 Reassemble and install clutch pack
12.0.1.15 Adjust spring tension
12.0.1.16 Inspect and replace master and slave cylinders
12.0.1.17 Rebuild master and slave cylinders
12.0.1.18 Inspect and replace lines and hoses
12.0.1.19 Bleed hydraulic system
12.0.1.20 Inspect self-adjusting clutch mechanism
12.0.1.21 Inspect, measure, and replace flywheel
12.0.1.22 Inspect and measure flywheel housing
12.0.1.23 Remove and replace electric clutch controls
12.0.1.24 Remove and replace hydraulic clutch controls
12.0.1.25 Test field coil and electromagnetic clutch

Competency 12.0.2: Service power takeoff (PTO)

Competency Builders:

12.0.2.1 Follow general safety precautions
12.0.2.2 Inspect and replace safety shields
12.0.2.3 Inspect and replace universal joints
12.0.2.4 Inspect and replace bearings
12.0.2.5 Inspect and replace seals
12.0.2.6 Inspect, measure, and replace shaft
12.0.2.7 Inspect and replace shaft gears
12.0.2.8 Inspect and replace disk
12.0.2.9 Inspect and replace plate
12.0.2.10 Inspect and replace quill assembly
12.0.2.11 Inspect and replace oil lines
12.0.2.12 Inspect and install clutch lever assembly
12.0.2.13 Inspect and adjust clutch lever free travel

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Competency 12.0.3: Maintain transmission

Competency Builders:

12.0.3.1 Follow general safety precautions
12.0.3.2 Check oil level
12.0.3.3 Check oil condition
12.0.3.4 Select oil
12.0.3.5 Add oil
12.0.3.6 Replace oil
12.0.3.7 Inspect and replace transmission oil filters
12.0.3.8 Inspect and test transmission temperature gauge and sending unit

Competency 12.0.4: Repair transmission

Competency Builders:

12.0.4.1 Follow general safety precautions
12.0.4.2 Remove and install transmission
12.0.4.3 Inspect and replace/repair transmission cases
12.0.4.4 Open transmission
12.0.4.5 Inspect and replace gears
12.0.4.6 Inspect and replace oil seals
12.0.4.7 Inspect and replace bearings
12.0.4.8 Measure and adjust drive shaft end play
12.0.4.9 Measure and adjust backlash
12.0.4.10 Inspect vents
12.0.4.11 Inspect and replace transmission mounting hardware
12.0.4.12 Inspect cover plates
12.0.4.13 Inspect coolers
12.0.4.14 Inspect speedometer drive
12.0.4.15 Inspect and replace transmission drive shaft*
12.0.4.16 Inspect and replace differential drive shaft*
12.0.4.17 Inspect and replace transmission countershaft*
12.0.4.18 Inspect and replace transmission oil pump
12.0.4.19 Inspect and replace power shift valve components*
12.0.4.20 Rebuild and replace hydrostatic motor*
12.0.4.21 Rebuild and replace hydrostatic pump*
12.0.4.22 Rebuild two-speed pack*
12.0.4.23 Clean sump strainer
12.0.4.24 Replace hydrostat reservoir
12.0.4.25 Inspect and replace planetary pack components*
12.0.4.26 Test assembled planetary pack*
12.0.4.27 Separate and rejoin tractor*
12.0.4.28 Inspect, adjust, and replace transfer case assembly*
12.0.4.29 Adjust accumulator charging orifice*
12.0.4.30 Adjust differential lock control valve*
12.0.4.31 Adjust oil pressure regulating valve*
12.0.4.32 Check and adjust end play on gears and shafts
12.0.4.33 Check spline wear
12.0.4.34 Conduct drag test
12.0.4.35 Identify gear tooth wear
12.0.4.36 Inspect planet carrier assembly*
12.0.4.37 Preload gear train

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Competency 12.0.5: Service shifter controls*

Competency Builders:

12.0.5.1 Follow general safety precautions*
12.0.5.2 Remove and replace shift linkage components*
12.0.5.3 Adjust shifting linkage*
12.0.5.4 Inspect and replace shift levers*
12.0.5.5 Inspect and replace speed change shifter yokes, shafts, pawls, and cams*
12.0.5.6 Inspect and replace pivots*
12.0.5.7 Inspect and replace latches*
12.0.5.8 Inspect and replace thrust washers*
12.0.5.9 Repair shift quadrant*
12.0.5.10 Replace shift cable*
12.0.5.11 Inspect, test, adjust, and replace air shift control components*
12.0.5.12 Remove and install speed range and change shifters*

Competency 12.0.6: Repair drive shaft assembly

Competency Builders:

12.0.6.1 Follow general safety precautions
12.0.6.2 Diagnose problems
12.0.6.3 Inspect drive shaft components
12.0.6.4 Repair drive shaft component
12.0.6.5 Replace drive shaft components
12.0.6.6 Check phasing of all yokes
12.0.6.7 Inspect and replace drive shaft center support bearings and mounts

Competency 12.0.7: Repair drive axle

Competency Builders:

12.0.7.1 Follow general safety precautions
12.0.7.2 Check for and repair fluid leaks
12.0.7.3 Inspect and replace cover plate
12.0.7.4 Inspect service vents
12.0.7.5 Check oil level
12.0.7.6 Check oil condition
12.0.7.7 Add oil
12.0.7.8 Remove and install differential*
12.0.7.9 Replace ring gear, bevel gears, and pinion*
12.0.7.10 Remove and install rear axle*
12.0.7.11 Remove and install planet pinion carrier assembly*
12.0.7.12 Replace axle oil seals*
12.0.7.13 Replace and adjust axle bearings*
12.0.7.14 Inspect and replace differential carrier assembly*
12.0.7.15 Inspect and replace rear-axle shafts*
12.0.7.16 Inspect and replace gears*
12.0.7.17 Inspect and replace bearings*
12.0.7.18 Adjust bearing preload*
12.0.7.19 Inspect and replace oil seals*
12.0.7.20 Adjust end play of drive axle*
12.0.7.21 Remove and replace wheel assembly
12.0.7.22 Diagnose wheel bearing problems
12.0.7.23 Inspect, lubricate, and replace wheel bearings*

Unit 13: Brake Systems

Competency 13.0.1: Repair air system*

Competency Builders:

13.0.1.1 Follow general safety precautions*
13.0.1.2 Diagnose problems*
13.0.1.3 Describe operation of automatic braking system*
13.0.1.4 Check air-system buildup time*
13.0.1.5 Inspect and replace air reservoir tank components*
13.0.1.6 Inspect, replace, align, and adjust compressor drive assembly*
13.0.1.7 Inspect and replace air compressor*
13.0.1.8 Inspect and replace air cleaner*
13.0.1.9 Inspect and replace oil and water lines*
13.0.1.10 Inspect, test, adjust, and replace system-pressure components*
13.0.1.11 Inspect and replace components of air dryer system*
13.0.1.12 Inspect and replace heater*
13.0.1.13 Inspect and replace electrical components*
13.0.1.14 Inspect, test, and replace low-pressure warning devices*
13.0.1.15 Inspect, test, and replace air pressure gauges*

Competency 13.0.2: Repair mechanical components

Competency Builders:

13.0.2.1 Follow general safety precautions
13.0.2.2 Disassemble drum brake assembly
13.0.2.3 Disassemble disc brake caliper
13.0.2.4 Inspect, adjust, and replace drum brake mounting hardware
13.0.2.5 Inspect and replace brake adjustment assembly
13.0.2.6 Adjust brake drag
13.0.2.7 Equalize brakes
13.0.2.8 Measure and adjust pedal free travel
13.0.2.9 Inspect and measure brake drums
13.0.2.10 Inspect and replace brake shoes
13.0.2.11 Replace shoe lining
13.0.2.12 Inspect and adjust disc brake caliper assembly
13.0.2.13 Inspect and replace brake pads
13.0.2.14 Inspect and measure brake rotors
13.0.2.15 Inspect, repair, and adjust parking brake

Competency 13.0.3: Repair differential brakes

Competency Builders:

13.0.3.1 Follow general safety precautions
13.0.3.2 Inspect and replace brake disc
13.0.3.3 Inspect and replace backing plate
13.0.3.4 Inspect and replace pressure plate

Competency 13.0.4: Repair brake hydraulics

Competency Builders:

13.0.4.1 Follow general safety precautions
13.0.4.2 Inspect, test, and replace master cylinder
13.0.4.3 Rebuild master cylinder
13.0.4.4 Inspect, test, and replace brake line
13.0.4.5 Inspect, test, and replace metering valves
13.0.4.6 Inspect, test, and replace proportioning valves
13.0.4.7 Inspect, test, and replace combination valves
13.0.4.8 Inspect and replace wheel cylinders
13.0.4.9 Rebuild wheel cylinders
13.0.4.10 Bleed air from system
13.0.4.11 Flush system
13.0.4.12 Determine brake fluid type
13.0.4.13 Add brake fluid

Unit 14: Suspension and Steering

Competency 14.0.1: Service steering mechanism

Competency Builders:

14.0.1.1 Follow general safety precautions
14.0.1.2 Inspect and replace steering column components
14.0.1.3 Phase steering shaft U-joints
14.0.1.4 Inspect and replace steering gear components
14.0.1.5 Adjust steering gear
14.0.1.6 Adjust sector shaft lash
14.0.1.7 Check fluid levels
14.0.1.8 Add fluid
14.0.1.9 Check for leaks
14.0.1.10 Inspect and replace bearings
14.0.1.11 Adjust steering bearings
14.0.1.12 Inspect and replace seals

Competency 14.0.2: Service power steering units

Competency Builders:

14.0.2.1 Follow general safety precautions
14.0.2.2 Check for leaks
14.0.2.3 Bleed system
14.0.2.4 Perform system pressure tests
14.0.2.5 Perform system flow tests
14.0.2.6 Inspect and replace reservoir
14.0.2.7 Inspect, test, and repair power steering pump
14.0.2.8 Replace power steering pump
14.0.2.9 Inspect and replace cooler components
14.0.2.10 Inspect and replace power steering valve assembly
14.0.2.11 Inspect and replace torque motor components

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Competency 14.0.3: Service steering linkage

Competency Builders:

14.0.3.1 Follow general safety precautions
14.0.3.2 Inspect and replace pitman arm
14.0.3.3 Inspect, adjust, and replace tie-rod components
14.0.3.4 Inspect and replace idler arm components
14.0.3.5 Inspect and replace steering arm components

Competency 14.0.4: Align wheels

Competency Builders:

14.0.4.1 Follow general safety precautions
14.0.4.2 Check and adjust toe-in
14.0.4.3 Check and adjust front wheel turning angle
14.0.4.4 Adjust drag link
14.0.4.5 Check rear-axle alignment
14.0.4.6 Check rear-axle tracking
14.0.4.7 Diagnose turning-angle problems
14.0.4.8 Diagnose handling problems

Competency 14.0.5: Service wheels, tires, and tracks

Competency Builders:

14.0.5.1 Follow general safety precautions
14.0.5.2 Evaluate tire wear
14.0.5.3 Evaluate handling problems
14.0.5.4 Inspect and measure tires
14.0.5.5 Patch tires
14.0.5.6 Patch tubes
14.0.5.7 Check tire pressure
14.0.5.8 Inflate tires
14.0.5.9 Load tires with ballast
14.0.5.10 Balance wheel and tire assembly
14.0.5.11 Follow tire disposal procedures
14.0.5.12 Protect tires during storage
14.0.5.13 Adjust wheel spacing
14.0.5.14 Remove and mount duals
14.0.5.15 Replace half sleeve
14.0.5.16 Replace hub
14.0.5.17 Drill lugs
14.0.5.18 Replace front wheel spindle
14.0.5.19 Add wheel weights
14.0.5.20 Adjust track tension
14.0.5.21 Inspect track pins and bushings

Unit 15: Heating and Air-Conditioning (AC)

Competency 15.0.1: Service air-conditioning system

Competency Builders:

15.0.1.1 Follow general safety precautions
15.0.1.2 Leak-test system
15.0.1.3 Recover Freon
15.0.1.4 Evacuate system
15.0.1.5 Charge system
15.0.1.6 Clean filters
15.0.1.7 Inspect and correct oil level
15.0.1.8 Inspect pressure protection devices
15.0.1.9 Inspect, test, and repair compressor
15.0.1.10 Replace compressor
15.0.1.11 Inspect, test, and replace condenser
15.0.1.12 Inspect and replace receiver
15.0.1.13 Inspect and replace accumulator
15.0.1.14 Inspect, test, and replace expansion valve
15.0.1.15 Inspect, test, and replace orifice tube
15.0.1.16 Inspect, test, and replace evaporator
15.0.1.17 Inspect and replace high-pressure relief device
15.0.1.18 Inspect and replace system service valves
15.0.1.19 Inspect operation of air ducts and louvers
15.0.1.20 Replace blower motor
15.0.1.21 Inspect and replace hoses and lines
15.0.1.22 Inspect and replace dryer
15.0.1.23 Inspect and replace thermostat

Competency 15.0.2: Service heating systems

Competency Builders:

15.0.2.1 Follow general safety precautions
15.0.2.2 Inspect and replace hoses
15.0.2.3 Inspect, test, and repair blower
15.0.2.4 Replace blower
15.0.2.5 Inspect and repair control linkage

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Unit 16: Hydraulics

Competency 16.0.1: Maintain hydraulic systems

Competency Builders:

16.0.1.1 Follow general safety precautions
16.0.1.2 Identify system types
16.0.1.3 Check oil level
16.0.1.4 Select oil
16.0.1.5 Interpret gauges
16.0.1.6 Bleed air
16.0.1.7 Drain, clean, flush, and fill hydraulic system
16.0.1.8 Replace oil filter
16.0.1.9 Inspect system for oil leaks
16.0.1.10 Inspect and replace oil cooler

Competency 16.0.2: Repair hydraulic systems

Competency Builders:

16.0.2.1 Follow general safety precautions
16.0.2.2 Read schematic of hydraulic systems
16.0.2.3 Inspect and replace pump and motor
16.0.2.4 Inspect and replace pump wear plates
16.0.2.5 Measure pump and motor tolerances
16.0.2.6 Inspect and replace cylinder barrels
16.0.2.7 Inspect and replace cylinder rods
16.0.2.8 Test valve cartridges for pressure setting
16.0.2.9 Inspect and replace valve components
16.0.2.10 Install O-rings, seals, and packing
16.0.2.11 Inspect and replace hoses and tubing
16.0.2.12 Inspect and replace accumulators
16.0.2.13 Troubleshoot problems

Unit 17: Employability Skills

Subunit 17.1: Career Development

Competency 17.1.1: Investigate career options

Competency Builders:

17.1.1.1 Determine interests and aptitudes
17.1.1.2 Identify career options
17.1.1.3 Research occupations matching interests and aptitudes
17.1.1.4 Select career(s) that best match(es) interests and aptitudes
17.1.1.5 Identify advantages and disadvantages of career options, including nontraditional careers
17.1.1.6 Assess differences in wages, annual incomes, and job opportunities based on geographic location
17.1.1.7 Develop a career plan

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Competency 17.1.2: Analyze potential barriers to employment

Competency Builders:

17.1.2.1 Identify common barriers to employment
17.1.2.2 Describe strategies to overcome employment barriers

Unit 17: Employability Skills
Subunit 17.2: Decision Making and Problem Solving

Competency 17.2.1: Apply decision-making techniques in the workplace

Competency Builders:

17.2.1.1 Identify the decision to be made
17.2.1.2 Compare alternatives
17.2.1.3 Determine consequences of each alternative
17.2.1.4 Make decisions based on values and goals
17.2.1.5 Evaluate the decision made

Competency 17.2.2: Apply problem-solving techniques in the workplace

Competency Builders:

17.2.2.1 Diagnose the problem and its causes
17.2.2.2 Identify alternatives and their consequences in relation to the problem
17.2.2.3 Examine multicultural and nonsexist dimensions of problem solving
17.2.2.4 Utilize resources to explore possible solutions to the problem
17.2.2.5 Compare and contrast the advantages and disadvantages of each solution
17.2.2.6 Determine appropriate action
17.2.2.7 Evaluate results

Unit 17: Employability Skills
Subunit 17.3: Work Ethic

Competency 17.3.1: Evaluate the relationship of self-esteem to work ethic

Competency Builders:

17.3.1.1 Identify special characteristics and abilities in self and others
17.3.1.2 Identify internal and external factors that affect self-esteem

Competency 17.3.2: Analyze the relationship of personal values and goals to work ethic both in and out of the workplace

Competency Builders:

17.3.2.1 Distinguish between values and goals
17.3.2.2 Determine the importance of values and goals
17.3.2.3 Evaluate how values affect goals
17.3.2.4 Identify short-term and long-term goals
17.3.2.5 Prioritize personal goals
17.3.2.6 Describe how personal values are reflected in work ethic
17.3.2.7 Describe how interactions in the workplace affect personal work ethic
17.3.2.8 Examine how life changes affect personal work ethic

Competency 17.3.3: Demonstrate work ethic

Competency Builders:

17.3.3.1 Examine factors that influence work ethic
17.3.3.2 Exhibit characteristics that reflect an appropriate work ethic

Unit 17: Employability Skills

Subunit 17.4: Job-Seeking Skills

Competency 17.4.1: Prepare for employment

Competency Builders:

17.4.1.1 Identify traditional and nontraditional employment sources
17.4.1.2 Utilize employment sources
17.4.1.3 Research job opportunities, including nontraditional careers
17.4.1.4 Interpret equal employment opportunity laws
17.4.1.5 Explain the critical importance of personal appearance, hygiene, and demeanor throughout the employment process
17.4.1.6 Prepare for generic employment tests and those specific to an occupation/organization

Competency 17.4.2: Design a résumé

Competency Builders:

17.4.2.1 Identify personal strengths and weaknesses
17.4.2.2 List skills and/or abilities, career objective(s), accomplishments/achievements, educational background, and work experience
17.4.2.3 Demonstrate legible written communication skills using correct grammar, spelling, and concise wording
17.4.2.4 Complete résumé using various formats
17.4.2.5 Secure references

Competency 17.4.3: Complete and process job application forms

Competency Builders:

17.4.3.1 Explain the importance of an application form
17.4.3.2 Identify ways to obtain job application forms
17.4.3.3 Describe methods for handling illegal questions on job application forms
17.4.3.4 Demonstrate legible written communication skills using correct grammar, spelling, and concise wording
17.4.3.5 Return application to proper person, request interview, and follow up

Competency 17.4.4: Demonstrate interviewing skills

Competency Builders:

17.4.4.1 Investigate interview environment and procedures
17.4.4.2 Explain the critical importance of personal appearance, hygiene, and demeanor
17.4.4.3 Demonstrate question and answer techniques
17.4.4.4 Demonstrate methods for handling difficult and/or illegal interview questions

Competency 17.4.5: Secure employment

Competency Builders:

17.4.5.1 Identify present and future employment opportunities within an occupation/organization
17.4.5.2 Research the organization/company
17.4.5.3 Use follow-up techniques to enhance employment potential
17.4.5.4 Compare and evaluate job offers

Unit 17: Employability Skills

Subunit 17.5: Job Retention Skills

Competency 17.5.1: Analyze the organizational structure of the workplace

Competency Builders:

17.5.1.1 Identify and evaluate employer expectations regarding job performance, work habits, attitudes, personal appearance, and hygiene
17.5.1.2 Be aware of and obey all company policies and procedures
17.5.1.3 Examine the role/relationship between employee and employer
17.5.1.4 Recognize opportunities for advancement and reasons for termination

Competency 17.5.2: Maintain positive relations with others

Competency Builders:

17.5.2.1 Exhibit appropriate work habits and attitude
17.5.2.2 Identify behaviors to establish successful working relationships
17.5.2.3 Cooperate and compromise through teamwork and group participation
17.5.2.4 Identify alternatives for dealing with harassment, bias, and discrimination based on race, color, national origin, sex, religion, handicap, or age

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Unit 17: Employability Skills
Subunit 17.6: Job Advancement

Competency 17.6.1: Analyze opportunities for personal and career growth

Competency Builders:

17.6.1.1 Determine opportunities within an occupation/organization
17.6.1.2 Compare and contrast other opportunities
17.6.1.3 List benefits of job advancement
17.6.1.4 Evaluate factors involved when assuming a new position within or outside an occupation/organization

Competency 17.6.2: Exhibit characteristics needed for advancement

Competency Builders:

17.6.2.1 Display a positive attitude
17.6.2.2 Demonstrate knowledge of a position
17.6.2.3 Perform quality work
17.6.2.4 Adapt to changing situations and technology
17.6.2.5 Demonstrate capability for different positions
17.6.2.6 Participate in continuing education/training programs
17.6.2.7 Respect, accept, and work with ALL individuals in the workplace

Unit 17: Employability Skills
Subunit 17.7: Technology in the Workplace

Competency 17.7.1: Assess the impact of technology in the workplace

Competency Builders:

17.7.1.1 Cite how past business/industry practices have influenced present business/industry processes
17.7.1.2 Investigate the use of technology in the workplace
17.7.1.3 Analyze how present skills can be applied to learning new technologies

Competency 17.7.2: Use a variety of technological applications

Competency Builders:

17.7.2.1 Explore basic mathematical, scientific, computer, and technological principles
17.7.2.2 Use technology to accomplish assigned tasks
17.7.2.3 Create solutions to problems using technical means

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Unit 17: Employability Skills
Subunit 17.8: Lifelong Learning

Competency 17.8.1: Apply lifelong learning to individual situations

Competency Builders:

17.8.1.1 Define lifelong learning
17.8.1.2 Identify factors that cause the need for lifelong learning

Competency 17.8.2: Adapt to change

Competency Builders:

17.8.2.1 Analyze the effects of change
17.8.2.2 Identify reasons why goals change
17.8.2.3 Describe the importance of flexibility when reevaluating goals
17.8.2.4 Evaluate the need for continuing education/training

Unit 17: Employability Skills
Subunit 17.9: Economic Education

Competency 17.9.1: Analyze global enterprise system

Competency Builders:

17.9.1.1 Identify characteristics of various enterprise systems
17.9.1.2 Examine the relationship between competition, risk, and profit
17.9.1.3 Illustrate how supply and demand influence price

Competency 17.9.2: Evaluate personal money management

Competency Builders:

17.9.2.1 Describe the need for personal management records
17.9.2.2 Identify methods of taxation
17.9.2.3 Analyze how credit affects financial security
17.9.2.4 Compare types and methods of investments
17.9.2.5 Prepare a personal budget
17.9.2.6 Be an informed and responsible consumer
17.9.2.7 Analyze the effects of advertising on the consumer

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Unit 17: Employability Skills
Subunit 17.10: Balancing Work and Family

Competency 17.10.1: Analyze the effects of family on work

Competency Builders:

17.10.1.1 Recognize how family values, goals, and priorities are reflected in the workplace
17.10.1.2 Identify present and future family structures and responsibilities
17.10.1.3 Describe personal and family roles
17.10.1.4 Analyze concerns of working parent(s)
17.10.1.5 Examine how family responsibilities can conflict with work
17.10.1.6 Resolve family-related conflicts
17.10.1.7 Explain how to use support systems/community resources to help resolve family-related conflicts

Competency 17.10.2: Analyze the effects of work on family

Competency Builders:

17.10.2.1 Identify responsibilities associated with paid and nonpaid work
17.10.2.2 Compare the advantages and disadvantages of multiple incomes
17.10.2.3 Explain how work can conflict with family responsibilities
17.10.2.4 Explain how work-related stress can affect families
17.10.2.5 Identify family support systems and resources

Unit 17: Employability Skills
Subunit 17.11: Citizenship in the Workplace

Competency 17.11.1: Exercise the rights and responsibilities of citizenship in the workplace

Competency Builders:

17.11.1.1 Identify the basic rights and responsibilities of citizenship
17.11.1.2 Examine the history and contributions of all racial, ethnic, and cultural groups

Competency 17.11.2: Cooperate with others in the workplace

Competency Builders:

17.11.2.1 Identify situations in which compromise is necessary
17.11.2.2 Examine how individuals from various backgrounds contribute to work-related situations
17.11.2.3 Demonstrate initiative to facilitate cooperation
17.11.2.4 Give and receive constructive criticism to enhance cooperation

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Unit 17: Employability Skills
Subunit 17.12: Leadership

Competency 17.12.1: Evaluate leadership styles appropriate for the workplace

Competency Builders:

17.12.1.1 Identify characteristics of effective leaders
17.12.1.2 Compare leadership styles
17.12.1.3 Demonstrate effective delegation skills
17.12.1.4 Identify opportunities to lead in the workplace

Competency 17.12.2: Demonstrate effective teamwork skills

Competency Builders:

17.12.2.1 Identify the responsibilities of a valuable group member
17.12.2.2 Exhibit open-mindedness
17.12.2.3 Identify methods of involving each member of a team
17.12.2.4 Contribute to the efficiency and success of a group
17.12.2.5 Determine ways to motivate others

Competency 17.12.3: Utilize effective communication skills

Competency Builders:

17.12.3.1 Identify the importance of listening
17.12.3.2 Demonstrate assertive communication
17.12.3.3 Recognize the importance of verbal and nonverbal cues and messages
17.12.3.4 Analyze written material
17.12.3.5 Prepare written material
17.12.3.6 Give and receive feedback
17.12.3.7 Articulate thoughts
17.12.3.8 Use appropriate language

Unit 17: Employability Skills
Subunit 17.13: Entrepreneurship

Competency 17.13.1: Evaluate the role of small business in the economy

Competency Builders:

17.13.1.1 Identify the benefits of small business to a community
17.13.1.2 Analyze opportunities for small business in a community

Competency 17.13.2: Examine considerations of starting a business

Competency Builders:

17.13.2.1 Research a business idea
17.13.2.2 Compare various ways to become a small business owner
17.13.2.3 Investigate factors to consider in financing a new business
17.13.2.4 Evaluate entrepreneurship as a career option

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